

# TRAINING GUIDE FOR EMERGENCY MEDICAL SERVICES LEADERS





# A GUIDE FOR YOU...

As you know, field triage is a key component of the emergency care system. This process helps guide emergency medical service (EMS) providers in transporting injured patients to the right place, at the right time.

We know that your time is valuable, so we have developed a short guide that can help you educate your EMS providers about the Field Triage Decision Scheme: The National Trauma Triage Protocol (decision scheme).

This Guide provides:

- a quick history of the decision scheme;
- a summary of the recent changes to the decision scheme;
- a list of helpful tools and resources to use and share with your EMS providers;  
*and*

- talking points for the PowerPoint presentation.

## KEY POINTS:

- the Field Triage Decision Scheme: The National Trauma Triage Protocol and the field triage decision scheme published by the American College of Surgeons in 2006 are one in the same.
- this decision scheme was developed to help EMS providers respond to daily occurring injuries versus mass casualty events.







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# JUST THE BASICS...

In 1976, the American College of Surgeons (ACS) developed the first field triage decision scheme to help guide EMS providers through four major steps for deciding where to transport injured patients. Since then, the field triage decision scheme has been updated multiple times to include new information and research.

## WHAT YOU DO REALLY MATTERS!

CDC supported research found that severely injured patients who receive care at a Level I trauma center have a 25 percent decreased risk of death.

The most recent update began in 2005 when the Centers for Disease Control and Prevention (CDC), working closely with ACS and the National Highway Traffic Safety Administration, convened meetings of experts to look at the latest research and to develop recommendations for updating the decision scheme. These experts—the National Expert Panel on Field Triage—had more than 100 years of experience combined and reviewed more than 160 research articles. The result was the (2006) Field Triage Decision Scheme: The National Trauma Triage Protocol.

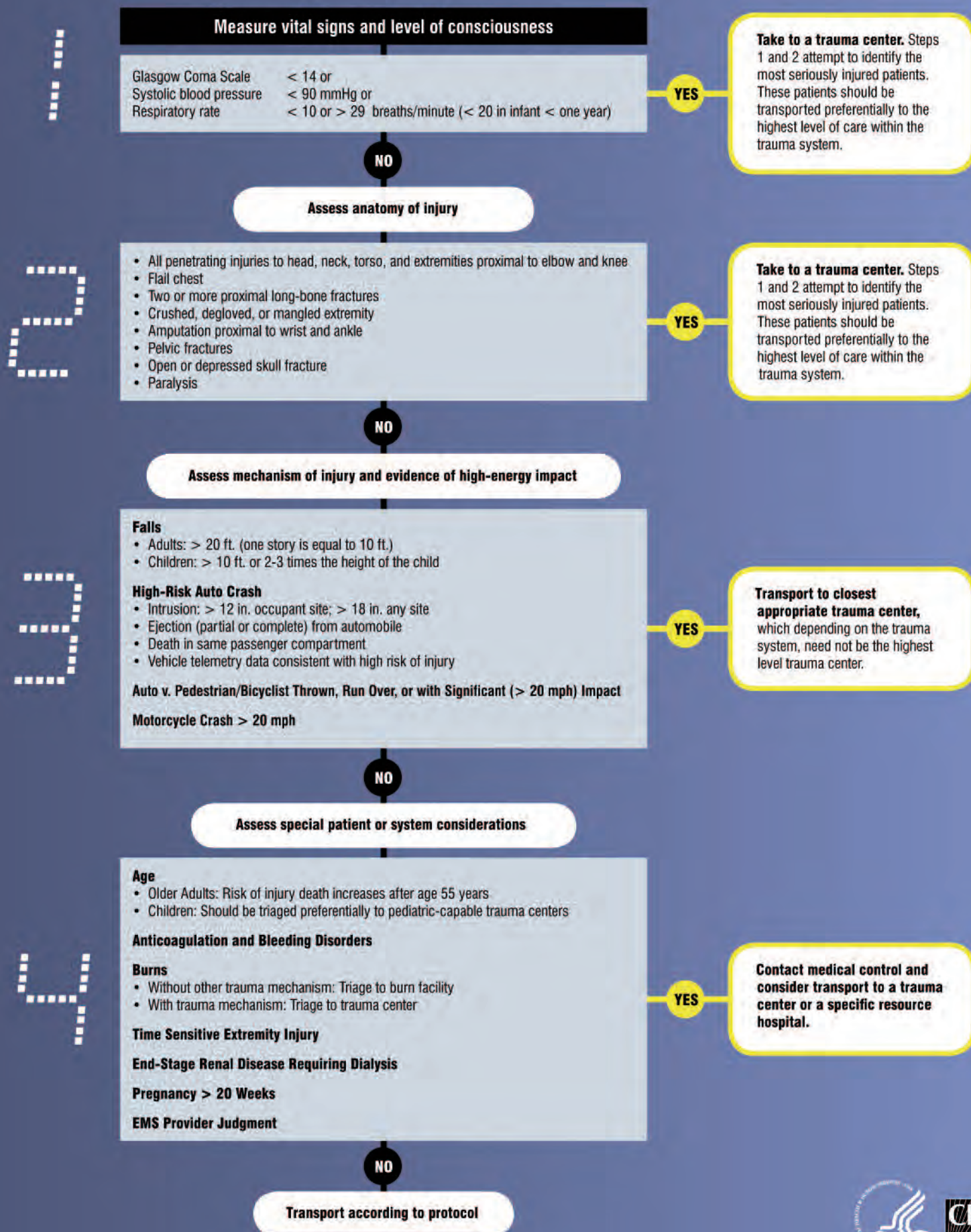
In January 2009, CDC's *Morbidity and Mortality Weekly Report* (MMWR) *Recommendations and Reports* published a summary of the expert panel's decisions about the protocol and the rationale for making those decisions, along with a continuing education opportunity.



As the MMWR article indicated, the decision scheme was not designed as a rigid set of rules, but as a guide to be adapted to local and regional needs. In addition, field triage is only one part of the overall process ensuring that every injured patient has timely access to appropriate trauma care. CDC will offer more materials on timely trauma care in the future as the decision scheme does not currently provide any metrics for assessing the protocol nor does it address issues related to secondary triage (rapid inter-facility transfer from lower to higher level of trauma care) or the use of air medical transport.



# FIELD TRIAGE DECISION SCHEME: THE NATIONAL TRAUMA TRIAGE PROTOCOL



When in doubt, transport to a trauma center.  
For more information on the Decision Scheme, visit: [www.cdc.gov/FieldTriage](http://www.cdc.gov/FieldTriage)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR DISEASE CONTROL AND PREVENTION



#### THE DECISION SCHEME

The current Field Triage Decision Scheme: The National Trauma Triage Protocol includes four steps:

- ▶ **Step 1. Physiologic criteria:** The EMS provider determines whether the patient has significant physiologic changes (e.g., abnormal vital signs or altered level of consciousness) that mandate transport to the highest level of care within the trauma system.
- ▶ **Step 2. Anatomic criteria:** If the patient is physiologically stable, the provider determines whether the patient's anatomic injuries (e.g., proximal amputations, paralysis, or penetrating injuries to the head, neck, or torso) need to be managed at the highest level of care within the trauma system.
- ▶ **Step 3. Mechanism of injury criteria:** If the patient does not meet physiologic or anatomic criteria for transport to the highest level of care within the trauma system, the provider then considers whether the mechanism of injury suggests a high risk for serious injury (e.g., a fall from a height or a high-risk automobile crash). This step

also incorporates vehicle telemetry, which will be discussed later.

▶ **Step 4. Special patient or system considerations:**

If the patient does not meet any of the criteria in the first three steps, the provider determines whether any special circumstances might place the patient at a higher risk for severe injury or indicate the need for specialized care (e.g., pregnancy, age, or use of certain medications).

#### THIS IS IMPORTANT:

Not all injuries require care at a Level I trauma center. Transporting less severely injured patients to a lower level trauma center or nontrauma center can help ensure that resources at Level I trauma centers are available for those patients who need them most.







# WHAT'S NEW...

After lots of discussion and review of the research, the National Expert Panel on Field Triage made some key changes in 2006 to the previous decision scheme. Below is a brief summary of those changes, which include additions, modifications, and deletions. If you would like to see more details about the changes and the rationale for each change, you can access the full report on the decision scheme published in MMWR at: [www.cdc.gov/FieldTriage](http://www.cdc.gov/FieldTriage).

## CHANGES TO THE STEPS IN BRIEF

### Step 1. Physiologic Criteria

#### ADDED:

##### **Threshold for respiratory rate (<20 bpm) in infants**

- *Why this was added:* Assessing physiologic parameters in infants in the field is difficult; however, respiratory rate is the one vital sign that can be easily measured and helps predict which children are at risk for serious injury. A particularly useful triage criterion, especially in infants, measuring respiratory rate was added because 1) it is easily observed, and 2) because EMS providers already have training about the importance of respiratory rate assessment in infants.

#### REMOVED:

##### **Revised trauma score (RTS)**

- *Why this was removed:* This criterion was removed for three reasons:
  1. Calculating RTS in the field is difficult and time-consuming.

2. RTS is more useful for quality improvement and outcome measures than for quick triage decisions.
3. Each of the components of RTS and triage-RTS (Glasgow coma scale, systolic blood pressure, and respiratory rate) are already included in Step 1, so including RTS in the decision scheme is redundant.

### Step 2. Anatomic Criteria

#### ADDED:

##### **Crushed, degloved, or mangled extremity**

- *Why this was added:* Crushed, degloved, or mangled extremities often cause damage to vascular, nerve, bone, or soft tissue singly or, more often, in combination. This criterion was added as these injuries often require a rapid, multi-specialty approach to salvage the limb, typically only available at hospitals with the highest level of trauma care.

#### MODIFIED:

##### **Skull fractures**

- *Why this was modified:* Skull fractures, whether open or depressed, result from considerable force to the skull, and the severity of the potential injury should not be underestimated in the field. To ensure that all patients with apparent skull fractures are transported to the highest level of care within the trauma system, “open and depressed” was changed to “open or depressed” for skull fractures.

REMOVED:

**Burns**

- *Why this was removed:* Burns were removed from Step 2 and placed in Step 4 to emphasize the need to determine whether the burn occurred with other injuries.

**Step 3. Mechanism of Injury Criteria**

ADDED:

**Vehicle telemetry**

- *Why this was added:* Vehicle telemetry technology (systems such as Advanced Automatic Collision Notification [AACN]) can give EMS providers the advantage of knowing key information even before they arrive at the scene of the injury. Using telemetry data, EMS providers can access details such as the exact location and speed of vehicles at the time of the crash, whether air bags were deployed and seatbelts were used, and if vehicle occupants are conscious and can communicate. This criterion was added as the number of cars that have vehicle telemetry systems continues to grow.

**WHAT IS VEHICLE TELEMETRY?**

Vehicle telemetry is a combination of telematics and computing that integrates a vehicle's electrical architecture, cellular communication, GPS, and voice recognition. For more information about AACN, go to [www.cdc.gov/injuryresponse/aacn.html](http://www.cdc.gov/injuryresponse/aacn.html).

MODIFIED:

**Falls**

- *Why this was modified:* The criterion for falls was modified for clarity and now specifically states the following:
  - Adults: Greater than 20 feet (one story is equal to 10 feet).
  - Children: Greater than 10 feet, or 2–3 times the child's height.

**High-risk auto crash**

- *Why this was modified:* "High-speed auto crash" was changed to "high-risk auto crash" because vehicle speed is only one of many factors that can help EMS providers predict serious injury among crash victims.

**Intrusion**

- *Why this was modified:* The panel recognized the difficulty in measuring intrusion at the crash site, the better energy absorbing capability of modern vehicles, and the extensive experience in trauma practice that increasing cabin intrusion indicates increasing force. As a result, the panel simplified the criterion for vehicle crash with cabin intrusion to state intrusion of ">12 inches for occupant site" or ">18 inches for any site in the vehicle."

**Auto/pedestrian**

- *Why this was modified:* Based on its review of the research and clinical experience, the panel modified this criterion to ensure transport to a trauma center when pedestrians or cyclists are struck by a vehicle or bicyclists are thrown, run over, or struck with great force.



### **Motorcycle crash**

- *Why this was modified:* “Motorcycle crash” was changed to “Motorcycle crash >20 mph.” However, the panel noted that more research needs to be done on field triage after a motorcycle crash.

### **REMOVED:**

#### **Rollover crash**

- *Why this was removed:* The panel noted that available evidence indicates that rollover crash, in the absence of ejection, is not associated with increasing injury severity. Because partial or complete ejection is already a criterion for transport to a trauma center under Step 3, the panel chose to delete rollover crash from the decision scheme.

#### **Extrication, crush depth, and deformity**

- *Why this was removed:* The panel removed this criterion after recognizing the difficulty EMS providers can have in determining exact extrication times while managing the scene of a crash and assessing and treating vehicle occupants. In addition, extrication is needed most often when intrusion into the passenger compartment has occurred. The panel determined that, although lengthy extrication time might indicate a severe injury, new crush technology in automobiles is increasing the number of nonseriously injured patients who require more than 20 minutes for extrication.

### **Step 4. Special Patient or System Considerations**

#### **ADDED:**

#### **Burns**

- *Why this was added:* If they did not sustain other trauma, patients with burns should be transported to a burn center rather than a trauma center. If a patient has both burn and nonburn injury, he or she should be transported to a trauma center for stabilization if the nonburn injury poses the greater risk.

#### **Time-sensitive extremity injury**

- *Why this was added:* This criterion was added because not all hospitals have the resources to evaluate whether intervention is needed to preserve an injured limb. EMS providers, in communication with their medical directors, should consider transporting a patient with an injured limb to a trauma center or specific resource hospital that can manage this type of injury.

#### **End-stage renal disease requiring hemodialysis**

- *Why this was added:* End-stage renal disease patients requiring dialysis often are coagulopathic. This criterion was added, as these patients might be at greater risk for hemorrhage and severity of hemorrhage, with the potential for increased injury and death.



#### EMS provider judgment

- *Why this was added:* EMS providers make field triage decisions every day. Although every patient and situation is different, EMS providers know their local EMS system—its capabilities and local policies. This criterion was added to acknowledge EMS providers' experience and knowledge.

#### MODIFIED:

##### Age

- *Why this was modified:* From the very oldest to the very youngest of patients, age is an important factor. A criterion on age was added to take this into account.

#### Pregnancy

- *Why this was modified:* The criterion on pregnancy was changed to "pregnancy >20 weeks" to better align with gestational age and the associated better survivability of the fetus.

#### REMOVED:

##### Cardiac and respiratory disease

- *Why this was removed:* Though cardiac and respiratory disease may affect how patients are managed, they do not mask the injury and are not, in and of themselves, effective in identifying injury. Thus, the panel recommended that patients who do not satisfy other triage criteria, but have



cardiac or respiratory disease or both, be assessed, evaluated, and transported according to local EMS protocols.

#### **Diabetes mellitus**

- *Why this was removed:* This criterion was removed because no data indicate that the presence of diabetes or hyperglycemia, in the absence of Step 1, 2, or 3 criteria, mandates transfer to a high-level trauma center. These patients, who may have non-severe injuries and complications related to diabetes or hyperglycemia, may be effectively managed at lower level trauma centers or nontrauma hospitals.

#### **Morbid obesity**

- *Why this was removed:* Although obese trauma patients have higher rates of morbidity and mortality compared with patients who are not obese, injuries that do not require care at a trauma center (that do not meet Step 1, 2, or 3 criteria) may be adequately managed at nontrauma

hospitals. In fact, many nontrauma hospitals may be better equipped and staffed to manage obese patients and the complications of their injuries.

#### **Immunosuppression**

- *Why this was removed:* The panel removed the immunosuppression criterion because it concluded that immunosuppression by itself does not increase the risk or severity of injury.

#### **Cirrhosis**

- *Why this was removed:* The panel removed this criterion because no evidence shows that cirrhosis without coagulopathy increases the risk for severe injury (e.g., liver laceration and hemorrhage). However, coagulopathy, a substantial complication of cirrhosis, is of concern. In those cases, cirrhotic patients found or thought to have coagulopathy should be transported to a trauma center.



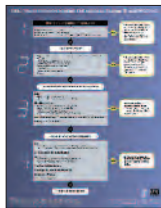


# THESE CAN HELP...

Our goal is to help you provide your EMS providers with useful information and tools related to the decision scheme. With that in mind, we have developed the following resources, available free of charge at [www.cdc.gov/FieldTriage](http://www.cdc.gov/FieldTriage):



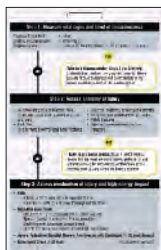
- MMWR report and continuing education opportunity,



- laminated ambulance poster (size: 8.5 x 11 inches),



- laminated binder insert for training or protocol binders (size: 8.5 x 11 inches),



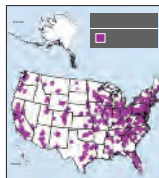
- badge with the decision scheme to clip to uniform (size: 2.5 x 3.5 inches),



- large poster (size: 16 x 22 inches),



- pocket card (folded size: 3 x 5 inches),



- electronic mapping tool (widget) that shows the location of trauma centers nationwide, *and*



- video podcast.

And more resources are to come...

## ORDERING IN BULK:

To order bulk quantities of CDC's decision scheme resources free of charge contact CDC by email ([ncipcdinfo@cdc.gov](mailto:ncipcdinfo@cdc.gov)) or toll free at 1 800 CDC INFO (1 800 232 4636).



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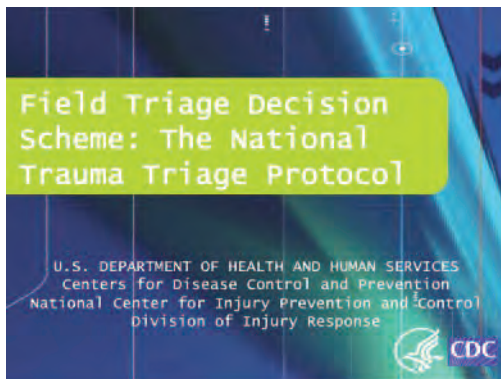


# SPREADING THE WORD...

Preparing what to say when training your EMS providers can take a lot of time. To help make your preparation as easy as possible, we have created a set of PowerPoint slides and sample talking points that you can download. The slides can be found at [www.cdc.gov/FieldTriage](http://www.cdc.gov/FieldTriage).

See suggested talking points for each slide below. You can use them word-for-word, or, if you prefer, add your own style to them; we leave that up to you.

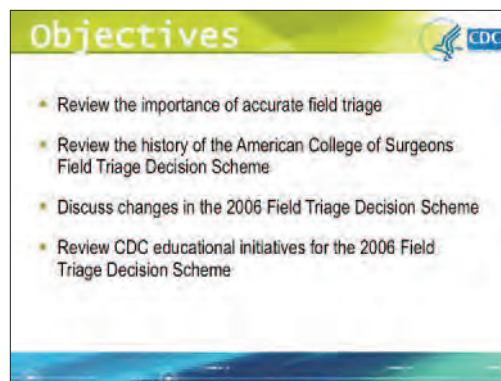
## SLIDE 1:



Welcome! Today, we are going to discuss the Field Triage Decision Scheme: The National Trauma Triage Protocol (decision scheme).

This presentation and the revised decision scheme are designed to help you do your job as emergency medical services (EMS) providers more effectively by helping you improve your response to severely injured patients.

## SLIDE 2:



My goals for this presentation are to:

- review the importance of accurate field triage in trauma care;
- review the history of the American College of Surgeons' (ACS) Field Triage Decision Scheme;
- discuss the changes in the 2006 Field Triage Decision Scheme: The National Trauma Triage Protocol; and, finally,
- review the Centers for Disease Control and Prevention (CDC)'s educational initiatives for the decision scheme.

## SLIDE 3:





The decision scheme is based upon “Guidelines for Field Triage of Injured Patients: Recommendations of the National Expert Panel on Field Triage” published in January 2009 in CDC’s *Morbidity and Mortality Weekly Report* (MMWR) *Recommendations and Reports*.

#### SLIDE 4:



Injury is the leading cause of death for Americans aged 1–44 years.

So understandably, almost half of the 16.6 million transport calls per year that we—the approximately 1 million EMS providers—respond to are related to injury.

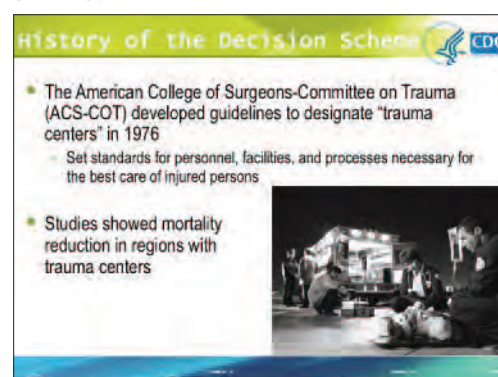
#### SLIDE 5:



CDC-supported research shows that, if you are severely injured, care at a Level I trauma center lowers your risk of death by 25%. This statistic is important to remember because, as an EMS provider, you know that getting the right patient, to the right place, at the right time is critical.

However, not all injuries require care at a Level I trauma center. Transporting less severely injured patients to a lower level trauma center or nontrauma center can help ensure that resources at Level I trauma centers are available for those patients who need them most.

#### SLIDE 6:

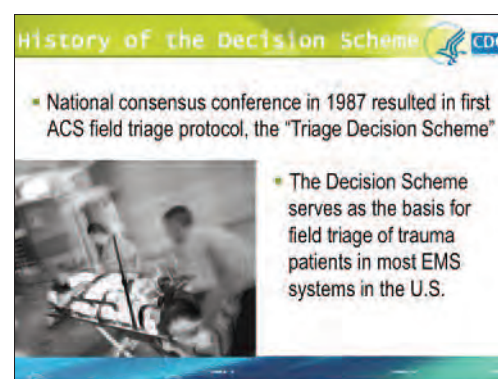


In 1976, the American College of Surgeons-Committee on Trauma developed guidelines to authenticate trauma centers and set standards for personnel, facilities, and processes necessary for the best care of injured persons.

Studies in the 1970s and early-to-mid-1980s showed a reduction in mortality in those regions with specialized trauma centers.

These studies led to a national consensus conference in 1987 that resulted in the first ACS field triage protocol, known as the “triage decision scheme” for trauma patients.

#### SLIDE 7:



Since 1987, this decision scheme has served as the basis for field triage for trauma patients in most EMS systems in the United States.

#### SLIDE 8:

**History of the Decision Scheme**

- The Decision Scheme has been revised four times (1990, 1993, 1999, 2006)
- In 2005-2006 the Centers for Disease Control and Prevention (CDC), with support from the National Highway Traffic Safety Administration (NHTSA), convened the National Expert Panel on Field Triage

Since its initial publication, the decision scheme has been revised four times: 1990, 1993, 1999, and 2006.

We will discuss the 2006 decision scheme today. The 2006 decision scheme was developed in 2005 when CDC in collaboration with ACS and with support from the National Highway Traffic Safety Administration, convened the National Expert Panel on Field Triage.

#### SLIDE 9:

**National Expert Panel on Field Triage**

- Membership**
  - National leadership, expertise, and contributions in the realm of injury prevention and control
- Members**
  - EMS Providers and Medical Directors
  - Emergency Medicine Physicians and Nurses
  - Trauma Surgeons
  - Public Health
  - Federal Agencies
  - Automotive Industry

This panel included professionals with a variety of backgrounds, including EMS, emergency medicine, trauma surgery, nursing, public health, research, and automotive engineering.

#### SLIDE 10:

**National Expert Panel on Field Triage**

- The role of the Expert Panel is to:
  - Periodically review the Decision Scheme
  - Ensure criteria are consistent with existing evidence
  - Ensure criteria are compatible with advances in technology
  - Make necessary recommendations for revision

The National Expert Panel on Field Triage's role is to:

- periodically review the decision scheme,
- ensure that criteria are consistent with existing evidence,
- ensure that criteria are compatible with advances in technology, *and*
- Make necessary recommendations for revision.

#### SLIDE 11:

**Field Triage Decision Scheme: The National Trauma Triage Protocol**

As I pointed out earlier, the decision scheme was developed to assist local medical directors and EMS providers with decisions about field triage and the destination facility.

It is the foundation for field triage protocols for trauma patients in most EMS systems across the United States.

The decision scheme is divided into four steps:

- Step 1. Physiologic criteria,
- Step 2. Anatomic criteria,
- Step 3. Mechanism of injury criteria, *and*
- Step 4. Special patient or system considerations.

At each step, the decision scheme includes two transition boxes. One box indicates if the patient's condition is serious enough to require transport to a certain level of trauma care. The other box reveals that the patient's condition is not severe enough for trauma center attention, but that transporting him or her to a hospital for observation and/or treatment should be "according to protocol." In essence, the decision scheme helps you determine the gravity of the injury and the most appropriate destination facility for your patient or it helps you move further through the decision scheme criteria.

#### SLIDE 12:

**Why this Decision Scheme is Unique**

- Takes into account recent changes in assessment and care of the injured patient in the U.S.
- Adds views of a broader range of disciplines and expertise into the process

This 2006 decision scheme is unique because it builds upon its previous versions. Specifically, the revised decision scheme does two things:

1. It considers recent changes in assessment and care of the injured patient in the United States regarding new technology, trauma systems, and our health-care system.

2. It adds the views of a broader range of disciplines and expertise to the process.

#### SLIDE 13:

**Purpose**

- This Decision Scheme was revised to facilitate more effective triage and better match trauma patients' conditions with the medical resources best equipped to treat them

So what is the purpose of this decision scheme? The decision scheme is intended to lay the foundation for developing local and regional field triage protocols, including areas with limited medical resources and/or geographic hurdles to transporting patients to trauma centers.

You can conduct more effective triage with the decision scheme to better match your trauma patients' conditions with the medical facilities that are best equipped to treat them.

#### SLIDE 14:

**Measure vital signs and level of consciousness**

Glasgow Coma Scale	<14 or
Systolic blood pressure	<90 or
Respiratory rate	<10 or >29 (≥20 in infant <one year)

**YES**

Take to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the trauma system.

**NO**

Assess anatomy of injury

**Step 1: Physiologic Criteria**

Now, let's take a look at the decision scheme step by step, starting with Step 1, "Physiologic criteria."



#### SLIDE 15:

**Step 1: 2006 Changes** CDC

- **Added**
  - A threshold for respiratory rate (<20 bpm) in infants
- **Removed**
  - Revised Trauma Score

**A threshold for respiratory rate (<20 bpm) in infants was added.**

- The lower limit for a normal respiratory rate for infants younger than 1 year is approximately 20 breaths per minute. Although assessing physiologic parameters in infants in the field is difficult, respiratory rate is the one vital sign that can be easily observed and measured.

**Revised trauma score (RTS) was removed.**

- After reviewing the studies and the practicality of RTS as a triage criterion, the panel determined that RTS is not a useful triage criterion and deleted it from the 2006 decision scheme. The panel noted that the complex formula used to calculate RTS was difficult and time-consuming for medical professionals in the field. The panel acknowledged that, in the normal course of practice, EMS providers rarely calculate and use RTS as a decision-making tool; rather, RTS is more useful for quality improvement and outcome measures than for emergent triage decisions. Finally, including RTS in the decision scheme is redundant because each of the components of RTS and triage-RTS (Glasgow coma scale, systolic blood pressure, and respiratory rate) are already included in Step 1.

#### SLIDE 16:

**Step 2: Anatomic Criteria** CDC

**YES**  
Take to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported, preferentially to the highest level of care within the trauma system.

**NO**  
Does not meet criteria of injury and evidence of high-energy impact.

We now move to Step 2, “Anatomic criteria.”

#### SLIDE 17:

**Step 2: 2006 Changes** CDC

- **Added**
  - Crushed, degloved, or mangled extremity
- **Modified**
  - “Open and depressed” changed to “open or depressed” skull fracture
- **Removed**
  - Burns moved to Step Four

**Crushed, degloved, or mangled was added.**

- Under “specific injuries,” the criterion “crushed, degloved, or mangled extremity” was added because these injuries require operations and intensive care. Injuries that crush, deglove, or mangle extremities are complex and might threaten the loss of the limb or the patient’s life. Such injuries may involve damage to vascular, nerve, bone, or soft tissue singly or, more often, in combination.

**Skull fractures were modified.**

- For skull fractures, “open and depressed” was changed to “open or depressed” to ensure that patients with either injury are transported to a trauma center.

### Burns were removed.

- The criterion on burns was removed and placed in Step 4 to emphasize the need to determine whether the burn occurred with other injuries.

### SLIDE 18:

**Step 3: Mechanism of Injury Criteria**

**High Risk Auto Crash**

- Adults: >20 ft (one story is equal to 10 ft)
- Children: >10 ft or 2-3 times the height of the child
- Ejection (partial or complete) from vehicle
- Death in same passenger compartment
- Injury to Pelvic/Thoracic/Neck/Head, Neck, or Spine
- Motorist/Child > 20 MPH

**High Risk Fall**

- Adults: >20 ft (one story is equal to 10 ft)
- Children: >10 ft or 2-3 times the height of the child
- Ejection (partial or complete) from vehicle
- Death in same passenger compartment
- Injury to Pelvic/Thoracic/Neck/Head, Neck, or Spine
- Motorist/Child > 20 MPH

Transport to closest appropriate trauma center while depending on the trauma system, and not on the highest level trauma center.

Assess special patient or system considerations.

Moving on to Step 3, “Mechanism of injury criteria.”

### SLIDE 19:

**Step 3: 2006 Changes**

**Added**

- Vehicle telemetry data consistent with high risk of injury

### Vehicle telemetry was added.

- Vehicle telemetry was added as a triage criterion in recognition that this telematics information might become more available in the future. Vehicle telemetry data are consistent with a high risk for injury (e.g., change in velocity, principle direction of force). The panel did not designate which components of telemetry should be used as triage criteria, as this emerging area requires additional evaluation to define the exact components (e.g., exact speed and delta V) that increase the risk for injury.

### SLIDE 20:

**Time Out**

**What is vehicle telemetry?**

- Combination of telematics and computing
- Integration of vehicle's electrical architecture, cellular communication, GPS systems, and voice recognition
- Can notify of exact location of crash
- Can enable communication with occupants
- Can provide key injury information to providers regarding force, mechanics, and energy of a crash that may help predict severity of injury

**Vehicle telemetry can:**

- provide the exact location of a crash,
- enable communication with occupants, and
- offer key injury information to EMS providers regarding force, mechanics, and energy of a crash that may help predict injury severity.

So what is vehicle telemetry? Vehicle telemetry is a combination of telematics and computing. Specifically, it is the integration of a vehicle's electrical architecture, cellular communication, global positioning systems, and voice recognition. Why is vehicle telemetry important?

Vehicle telemetry can:

- provide the exact location of a crash,
- enable communication with occupants, and
- offer key injury information to EMS providers regarding force, mechanics, and energy of a crash that may help predict injury severity.

### SLIDE 21:

**Step 3: 2006 Changes**

**Modified**

- Falls:
  - Adults: >20 feet (one story = 10 feet)
  - Children: >10 feet or 2-3 times the child's height
- "High speed auto crash" was changed to "high-risk auto crash"


### Falls was modified.

- The criterion for falls has been clarified to include the following:
  - Adults: Greater than 20 feet (one story is equal to 10 feet).
  - Children: Greater than 10 feet, or 2–3 times the child's height.


### High-speed auto crash was modified.

- “High-speed auto crash” was changed to “high-risk auto crash.”

#### SLIDE 22:

**Step 3: 2006 Changes** 

- **Modified**
  - Intrusion modified to >12 inches at occupant site or >18 inches at any site
  - Auto-pedestrian/struck/auto-bicycle injury changed to “Auto v. pedestrian/bicyclist thrown, run over, or with significant (>20mph) impact”
  - Motorcycle crash shortened to “Motorcycle crash >20mph”



### Intrusion was modified.

- In the 1999 decision scheme, two criteria were related to vehicle deformity or crush: “major auto deformity >20 inches” and “intrusion into passenger compartment >12 inches.” In the revised 2006 decision scheme, the criteria for vehicle crash with cabin intrusion has been simplified to an “intrusion of >12 inches for occupant site” (i.e., the passenger cabin or any site within the vehicle in which any occupant was present at the time of the crash) or “>18 inches for any site in the vehicle.” Intrusion refers to interior compartment intrusion, as opposed to exterior deformation of the vehicle.


### Auto/pedestrian was modified.

- Panel members reported a high incidence of intensive care unit admission and operating room management for both pedestrians struck by a vehicle and bicyclists thrown, run over, or struck with substantial impact. Based on the panel’s experience and review of the evidence, the criterion was retained in the 2006 decision scheme to ensure that pedestrians or cyclists who are victims of such vehicular injuries are transported to a trauma center.


### Motorcycle crash was modified.

- Although the evidence on field triage of motorcycle crash patients was limited, the panel also noted that data was insufficient to justify removing motorcycle crash as a triage criterion. Recognizing the need for further research evaluating this criterion, the panel elected to retain motorcycle crash at >20 mph as a criterion for transport to a trauma center.

#### SLIDE 23:

**Step 3: 2006 Changes** 

- **Removed**
  - Rollover crash
  - Extrication time >20 minutes
  - Crush depth
  - Vehicle deformity >20 inches and vehicle speed >40 mph



### Rollover crash was removed.

- The increased injury severity associated with rollover crashes that results from a motor vehicle occupant being ejected, either partially or completely, occurs most frequently when restraints are not used. The panel chose to delete rollover crash from the 2006 decision scheme because partial or complete ejection is already a criterion for transport to a trauma center as a mechanism of injury associated with a high-risk motor vehicle crash (MVC).

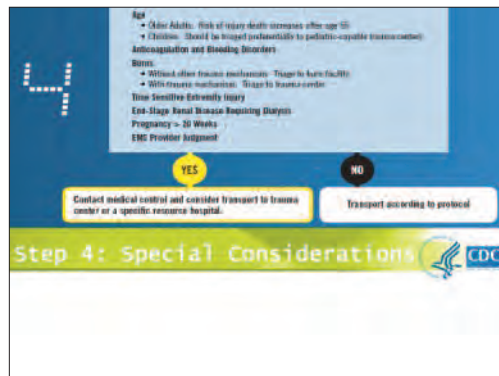
### Extrication, crush depth, and deformity were removed.

- The panel recognized that, although lengthy extrication time might be indicative of increasing injury severity, new crush technology in automobiles is increasing the number of non-seriously injured patients who require more than 20 minutes for extrication. Intrusion is already contained in the 2006 decision scheme as a criterion for transport to a



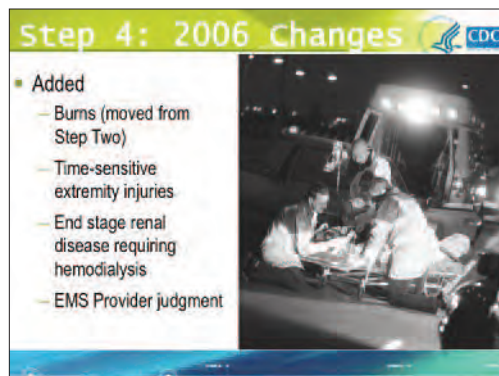
trauma center associated with a high-risk MVC. The panel determined that the modifications made to the triage protocol for cabin intrusion adequately addressed issues that were relevant to extrication time and removed extrication time as a criterion.

#### SLIDE 24:



We have reached Step 4, “Special patient or system considerations.”

#### SLIDE 25:



#### Burns was added.

- Burns as a criterion was moved from Step 2 (Anatomic criteria) to Step 4 of the decision scheme to emphasize the need to determine whether the burn occurred with other injuries. If they did not sustain other trauma, patients with burns should be transported to a burn center rather than a trauma center. If the nonburn injury presents a greater immediate risk, the patient should be

stabilized in a trauma center and then transferred to a burn center.

#### Time-sensitive extremity injury was added.

- The panel noted that not all hospitals have the resources available to evaluate whether additional intervention is required to preserve the limb. Even when patients with such injuries do not satisfy anatomic criteria, they are nonetheless at substantial risk for serious injury. Field providers, in communication with their medical directors, should consider transporting a patient with an injured limb to a trauma center or specific resource hospital that can manage these injuries. The panel added this criterion to the 2006 decision scheme to ensure that such transport is considered.

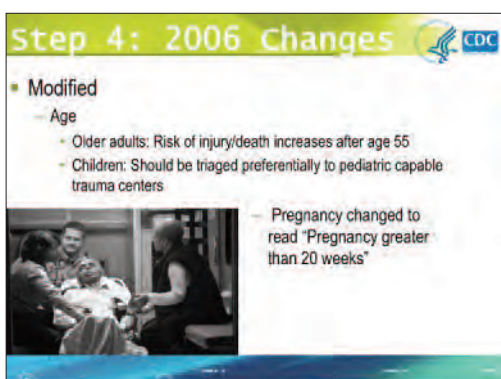
#### End-stage renal disease requiring hemodialysis was added.

- Although no studies were identified that evaluated the field triage of renal disease or dialysis patients, the panel noted that end-stage renal disease patients requiring dialysis are often coagulopathic. This condition increases patients' risk for and severity of hemorrhage and, subsequently, serious injury or death.

#### EMS provider judgment was added.

- The panel recognized the impossibility of predicting all possible special circumstances at an injury scene. EMS providers routinely make triage decisions and have the expertise and experience to make judgments about atypical situations. Given the situation, capabilities of the EMS and trauma systems, and local policies, EMS providers may decide, independently or in association with online medical direction, to transport a patient not otherwise meeting the criteria in Steps 1–4 to a trauma center.

**SLIDE 26:**



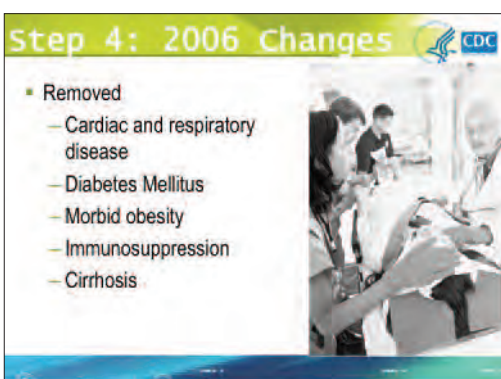
**Age was modified.**

- Adult trauma victims older than 55 years are at increased risk for injury and death.
- Children younger than 15 years who satisfy the criteria of Steps 1–3 should be transported to a pediatric trauma center if one is available.

**Pregnancy was modified.**

- The panel determined that the phrasing “pregnancy >20 weeks” more accurately captures the association of fetal gestational age and potential viability in this context and made this change for the 2006 decision scheme.

**SLIDE 27:**



**Cardiac and respiratory disease was removed.**

- Cardiac and respiratory diseases are underlying medical conditions that can make the consequences of injuries more difficult to manage in the absence of physiologic, anatomic, mechanism of

injury, or other special considerations (e.g., age >55 years). However, the presence of the disease itself should not mandate transfer to a trauma center or other specific resource hospital.

**Diabetes mellitus was removed.**

- Based on the evidence, the panel determined that, although an injured patient with diabetes or hyperglycemia might have more complications and a longer hospital stay than a patient without diabetes, no data indicate that the presence of these conditions, in the absence of Step 1, 2, or 3 criteria, mandates transfer to a high-level trauma center.

**Morbid obesity was removed.**

- Although obese trauma patients may have higher rates of injury and death than nonobese patients, injuries that do not require care at a trauma center (that do not meet Step 1, 2, or 3 criteria) may be adequately managed at nontrauma hospitals.

**Immunosuppression was removed.**

- This category of patients was removed as a criterion for transfer to a trauma center because the panel concluded that immunosuppression by itself does not increase the risk or severity of injury.

**Cirrhosis was removed.**

- No evidence shows that, in the absence of physiologic, anatomic, or mechanism of injury criteria, cirrhosis without coagulopathy increases the risk for severe injury (e.g., liver laceration and hemorrhage). However, coagulopathy, a substantial complication of cirrhosis, is of concern, and the panel noted that injured, cirrhotic patients having or thought to have coagulopathy should be triaged as outlined in the criterion regarding anticoagulation and bleeding disorders.

**SLIDE 28:**



CDC and its partners have developed resources and tools to help EMS professionals learn about the decision scheme. These resources include:

- MMWR report and free continuing education opportunity,
- laminated ambulance poster,
- laminated binder insert for training or protocol binders,
- badge with the decision scheme to clip to uniform,
- large poster,
- pocket card,
- electronic mapping tool (widget) that shows the location of trauma centers nationwide,
- recorded webcast with CDC experts, *and*
- video podcast.

And more resources are to come...

**SLIDE 29:**



Many organizations and agencies endorse the decision scheme. They include:

- American College of Emergency Physicians,
- Commission on Accreditation of Medical Transport Systems,
- Air and Surface Transport Nurses Association,
- American Public Health Association,
- American Academy of Pediatrics,
- National Association of EMS Educators,
- The Joint Commission, *and*
- National Association of Emergency Medical Technicians.

**SLIDE 30:**

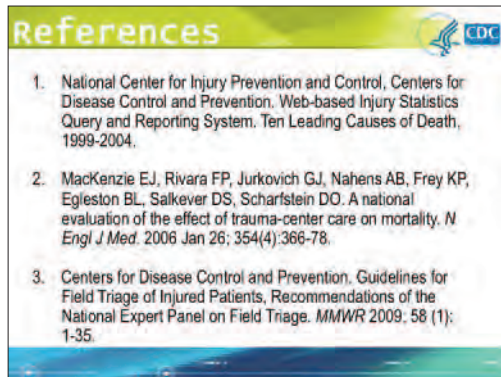


Other organizations and agencies that endorse the decision scheme include:

- American College of Surgeons,
- National Native American EMS Association,
- International Association of Flight Paramedics,
- National Association of EMS Physicians,
- American Pediatric Surgical Association,
- National Ski Patrol,
- National Association of State EMS Officials,
- Air Medical Physician Association,
- American Medical Association, *and*
- Concurrence from the National Highway Traffic Safety Administration.



SLIDE 31:

A presentation slide titled "References" with a CDC logo in the top right corner. It contains a numbered list of three references.

**References**

1. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System. Ten Leading Causes of Death, 1999-2004.
2. MacKenzie EJ, Rivara FP, Jurkovich GJ, Nahens AB, Frey KP, Eggleston BL, Salkever DS, Scharfstein DO. A national evaluation of the effect of trauma-center care on mortality. *N Engl J Med*. 2006 Jan 26; 354(4):366-78.
3. Centers for Disease Control and Prevention. Guidelines for Field Triage of Injured Patients, Recommendations of the National Expert Panel on Field Triage. *MMWR* 2009; 58 (1): 1-35.

Here are the references for this presentation. However, more than 160 references included in the MMWR article were used to revise the decision scheme.

SLIDE 32:

A presentation slide with a CDC logo in the top right corner. The text reads: "For more information or to access FREE materials, visit:" followed by a green button containing the URL "www.cdc.gov/FieldTriage".

**For more information or to access  
FREE materials, visit:**

**www.cdc.gov/FieldTriage**

Visit CDC's Web site for more information about the decision scheme and to take advantage of the continuing education opportunity. You can also order or download the materials at no cost.

**THE WEB SITE IS:**  
**www.cdc.gov/FieldTriage.**



# YOUR OPINION IS IMPORTANT...

We want to hear from you. As with most guidelines, the decision scheme will need to be updated, so we want to hear your reactions—positive, neutral, or negative—about the actual criteria. We would like to know what EMS leaders and providers are saying (or what questions you and they have) about the decision scheme during your trainings or how the protocol will affect what you and your EMS providers do everyday. Also, please feel free to share any research that shows a need for considering changing the criteria in the future.

## WHAT YOU THINK IS REALLY IMPORTANT TO US!

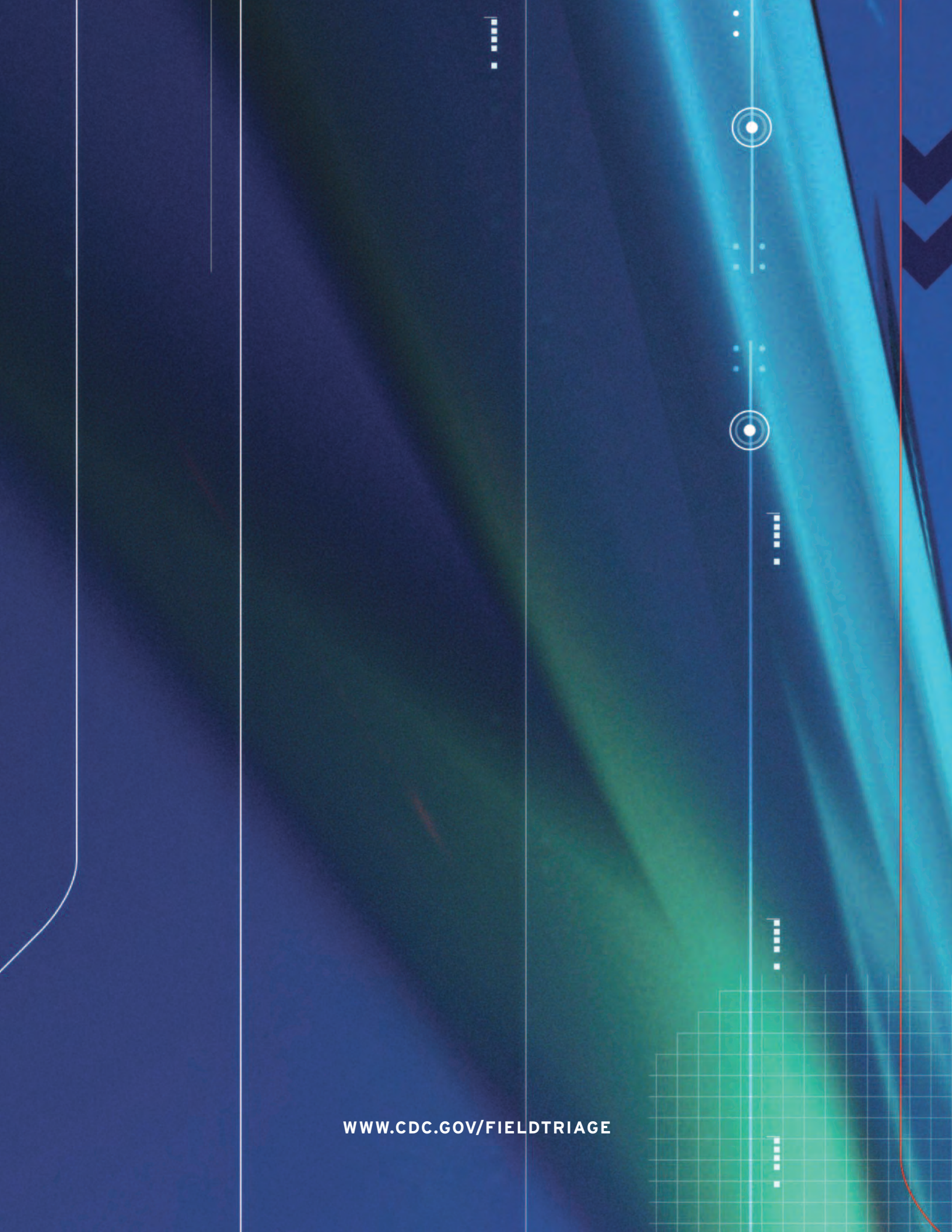
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***Together, we can save lives and help all  
people live to their full potential!***



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